PATENT

Attorney Docket No. 24584

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of

VAN DUIJN et al.

Examiner: J. Goldberg

Serial No.: 09/973,180

Art Unit: 1634

Filed:

October 10, 2001

DIAGNOSTICS AND THERAPEUTICS FOR AUTOSOMAL DOMINANT

HEMOCHROMATOSIS

STATEMENT OF SEQUENCE LISTING

As required by 37 CER- 1.821 (e)-(g) and 1.825 (a)-(b), applicants state that the application, as filed, supports the amendments to the sequence listing and that the attached replacement paper and computer readable forms of the sequence listing do not contain new matter. Further, the sequence listing information recorded in computer readable form is identical to the written sequence listing and contain no new matter.

Respectfully submitted,

NATH & ASSOCIATES PLLC

Date: 29 Jan 2004

NATH & ASSOCIATES PLLC

1030 Fifteenth Street, N.W.

Sixth Floor

Washington, D.C. 20005-1503

Tel: (202) 775-8383 Fax: (202) 775-8396

OHN: Unit ayd

Gary M. Nath

Reg. No. 26,965

Todd L. Juneau

Req. No. 40,669

Customer No. 20529

complete seq list.ST25.txt SEQUENCE LISTING

<110> Van Duijn, C. M. Heutink, P. Oostra, B. A. <120> DIAGNOSTICS AND THERAPEUTICS FOR AUTOSOMAL DOMINANT **HEMOCHROMATOSIS** <130> 24584 09/973,180 <140> <141> 2001-10-10 <150> 60/301,429 2001-06-29 <151> <160> <170> PatentIn version 3.2 <210> $\bar{2}443$ <211> <212> DNA < 21.3 >Homo sapiens <220> <221> mutation <222> (733)..(735)<400> agetggetea gggegteege taggetegga egacetgetg ageeteecaa acegetteea 60 taaggctttg ctttccaact tcagctacag tgttagctaa gtttggaaag aaggaaaaaa 120 180 gaaaatccct gggccccttt tcttttgttc tttgccaaag tcgtcgttgt agtctttttg: 240 cccaaggctg ttgtgttttt agaggtgcta tctccagttc cttgcactcc tgttaacaag 300 cacctcageg agageageag cagegatage agecgeagaa gagecagegg ggtegeetag 360 tgtcatgacc agggcqggag atcacaaccg ccagagagga tgctgtggat ccttggccga ctacctgacc tetgcaaaat teetteteta eettggteat teteteta ettggggaga 420 teggatgtgg caetttgegg tgtetgtgtt tetggtagag etetatggaa acageeteet 480 tttgacagca gtctacgggc tggtggtggc agggtctgtt ctggtcctgg gagccatcat 540 600 eggtgactgg gtggacaaga atgetagaet taaagtggee cagaeetege tggtggtaca gaatgtttca gtcatcctgt gtggaatcat cctgatgatg gttttcttac ataaacatga 660 rettetgace atgtaceatg gatgggttet caetteetge tatateetga teateactat 720 780 tgcaaatatt gcacatttgg ccagtactgc tactgcaatc acaatccaaa gggattggat tgttgttgtt gcaggagaag acagaagcaa actagcaaat atgaatgcca caatacgaag 840 gattgaccag ttaaccaaca tcttagcccc catggctgtt ggccagatta tgacatttgg 900 960 ctccccagtc atcggctgtg gctttatttc gggatggaac ttggtatcca tgtgcgtgga Page 1

```
gtacgtcctg ctctggaagg tttaccagaa aaccccagct ctagctgtga aagctggtct
                                                                     1020
                                                                     1080
taaagaagag gaaactgaat tgaaacagct gaatttacac aaagatactg agccaaaacc
                                                                     1140
cctggaggga actcatctaa tgggtgtgaa ggactctaac atccatgagc ttgaacatga
                                                                     1200
gcaagagcct acttgtgcct cccagatggc tgagcccttc cgtaccttcc gagatggatg
                                                                     1260
ggtctcctac tacaaccagc ctgtgtttct ggctggcatg ggtcttgctt tcctttatat
gactgtcctg ggctttgact gcatcaccac agggtacgcc tacactcagg gactgagtgg
                                                                     1320
                                                                     1380
ttccatcctc agtattttga tgggagcatc agctataact ggaataatgg gaactgtagc
                                                                     1440
ttttacttgg ctacgtcgaa aatgtggttt ggttcggaca ggtctgatct caggattggc
acagetttee tgtttgatet tgtgtgtgat etetgtatte atgeetggaa geeceetgga
                                                                     1500
cttgtccgtt tctccttttg aagatatccg atcaaggttc attcaaggag agtcaattac
                                                                     1560
acctaccaag atacctgaaa ttacaactga aatatacatg tctaatgggt ctaattctgc
                                                                     1620
taatattgtc ccggagacaa gtcctgaatc tgtgcccata atctctgtca gtctgctgtt
                                                                     1680
tgcaggcgtc attgctgcta gaatcggtct ttggtccttt gatttaactg tgacacagtt
                                                                     1740
gctgcaagaa aatgtaattg aatctgaaag aggcattata aatggtgtac agaactccat
                                                                     1800
                                                                     1860
qaactatctt cttgatcttc tgcatttcat catggtcatc ctggctccaa atcctgaagc
ttttggcttg ctcgtattga tttcagtctc ctttgtggca atgggccaca ttatgtattt
                                                                     1920
ccgatttgcc caaaatactc tgggaaacaa gctctttgct tgcggtcctg atgcaaaaga
                                                                     1980
                                                                     2040
agttaggaag gaaaatcaag caaatacatc tgttgtttga gacagtttaa ctgttgctat
cctgttacta gattatatag agcacatgtg cttattttgt actgcagaat tccaataaat
                                                                     2100
ggctgggtgt tttgctctgt ttttaccaca gctgtgcctt gagaactaaa agctgtttag
                                                                     2160
gaaacctaag tcagcagaaa ttaactgatt aatttccctt atgttgaggc atggraaaaa
                                                                     2220
aattggraaa aggaaaaact cagttttaaa tacgggagac tataatggat aacactgrat
                                                                     2280
                                                                     2340
tcccctattt ctcatgagta gatacaatct tacgtaaaag agtggttagt cacgtgaatt
                                                                     2400
cagttatcat ttgacagatt cttatctgta ctagaattca gatatgtcag ttttctgcaa
                                                                     2443
aactcactct tgttcaagac tagctaattt atttttttgc atc
```

```
<210> 2
<211> 571
<212> PRT
<213> Homo sapiens
```

<400> 2

Met Thr Arg Ala Gly Asp His Asn Arg Gln Arg Gly Cys Cys Gly Ser 1 5 10 15

Page 2

complete seq list.ST25.txt Leu Ala Asp Tyr Leu Thr Ser Ala Lys Phe Leu Leu Tyr Leu Gly His 20 25 30 Ser Leu Ser Thr Trp Gly Asp Arg Met Trp His Phe Ala Val Ser Val 35 40 45 Phe Leu Val Glu Leu Tyr Gly Asn Ser Leu Leu Leu Thr Ala Val Tyr 50 55 60 Gly Leu val val Ala Gly Ser Val Leu val Leu Gly Ala Ile Ile Gly 65 70 75 80 Asp Trp Val Asp Lys Asn Ala Arg Leu Lys Val Ala Gln Thr Ser Leu 85 90 95 val val Gln Asn val Ser val Ile Leu Cys Gly Ile Ile Leu Met Met 100 105 110 val Phe Leu His Lys His Glu Leu Leu Thr Met Tyr His Gly Trp Val 115 120 125 Leu Thr Ser Cys Tyr Ile Leu Ile Ile Thr Ile Ala Asn Ile Ala Asp 130 135 140 Leu Ala Ser Thr Ala Thr Ala Ile Thr Ile Gln Arg Asp Trp Ile Val 145 150 155 160 Val Val Ala Gly Glu Asp Arg Ser Lys Leu Ala Asn Met Asn Ala Thr 165 170 175 lle Arg Arg Ile Asp Gln Leu Thr Asn Ile Leu Ala Pro Met Ala Val 180 185 190 Gly Gln Ile Met Thr Phe Gly Ser Pro Val Ile Gly Cys Gly Phe Ile 195 200 205 Ser Gly Trp Asn Leu Val Ser Met Cys Val Glu Tyr Val Leu Leu Trp 210 220 Lys Val Tyr Gln Lys Thr Pro Ala Leu Ala Val Lys Ala Gly Leu Lys 225 230 235 Glu Glu Glu Thr Glu Leu Lys Gln Leu Asn Leu His Lys Asp Thr Glu 245 250 255 Pro Lys Pro Leu Glu Gly Thr His Leu Met Gly Val Lys Asp Ser Asn 260 265 270 Page 3

Ile His Glu Leu Glu His Glu Gln Glu Pro Thr Cys Ala Ser Gln Met 275 280 285

Ala Glu Pro Phe Arg Thr Phe Arg Asp Gly Trp Val Ser Tyr Tyr Asn 290 295 300

Gln Pro Val Phe Leu Ala Gly Met Gly Leu Ala Phe Leu Tyr Met Thr 305 315 320

Val Leu Gly Phe Asp Cys Ile Thr Thr Gly Tyr Ala Tyr Thr Gln Gly 325 330 335

Gly Ile Met Gly Thr Val Ala Phe Thr Trp Leu Arg Arg Lys Cys Gly 355 360 365

Leu Val Arg Thr Gly Leu Ile Ser Gly Leu Ala Gln Leu Ser Cys Leu 370 380

Ile Leu Cys Val Ile Ser Val Phe Met Pro Gly Ser Pro Leu Asp Leu 385 395 400

Ser val Ser Pro Phe Glu Asp Ile Arg Ser Arg Phe Ile Gln Gly Glu 405 410 415

Ser Asn Gly Ser Asn Ser Ala Asn Ile Val Pro Glu Thr Ser Pro Glu 435 440 445

Ser Val Pro Ile Ile Ser Val Ser Leu Leu Phe Ala Gly Val Ile Ala 450 460

Ala Arg Ile Gly Leu Trp Ser Phe Asp Leu Thr Val Thr Gln Leu Leu 465 470 480

Gln Gln Asn Val Ile Glu Ser Glu Arg Gly Ile Ile Asn Gly Val Gln 485 490 495

Asn Ser Met Asn Tyr Leu Leu Asp Leu Leu His Phe Ile Met Val Ile 500 505 510

Leu Ala Pro Asn Pro Glu Ala Phe Gly Leu Leu Val Leu Ile Ser Val 515 520 525 Page 4

Ser Phe Val Ala Met Gly His Ile Met Tyr Phe Arg Phe Ala Gln Asn 530 540

Thr Leu Gly Asn Lys Leu Phe Ala Cys Gly Pro Asp Ala Lys Glu Val 545 550 555

arg Lys Glu Asn Gln Ala Asn Thr Ser Val Val 565 570

<210> 3 <211> 571

<211> 571 <212> PRT

<213> Homo sapiens

<220>

<221> VARIANT

<222> (144)..(144)

<400> 3

Met Thr Arg Ala Gly Asp His Asn Arg Gln Arg Gly Cys Cys Gly Ser

Leu Ala Asp Tyr Leu Thr Ser Ala Lys Phe Leu Leu Tyr Leu Gly His $20 \hspace{1cm} 25 \hspace{1cm} 30$

Ser Leu Ser Thr Trp Gly Asp Arg Met Trp His Phe Ala Val Ser Val 35 40

Phe Leu Val Glu Leu Tyr Gly Asn Ser Leu Leu Leu Thr Ala Val Tyr 50 55

Gly Leu Val Val Ala Gly Ser Val Leu Val Leu Gly Ala Ile Ile Gly 65 70 75 80

Asp Trp Val Asp Lys Asn Ala Arg Leu Lys Val Ala Gln Thr Ser Leu 85 90 95

Val Val Gln Asn Val Ser Val Ile Leu Cys Gly Ile Ile Leu Met Met 100 105 110

Val Phe Leu His Lys His Glu Leu Leu Thr Met Tyr His Gly Trp Val 115 120 125

Leu Thr Ser Cys Tyr Ile Leu Ile Ile Thr Ile Ala Asn Ile Ala His 130 135 140

Leu Ala Ser Thr Ala Thr Ala Ile Thr Ile Gln Arg Asp Trp Ile Val Page 5

complete seq list.ST25.txt 155 160 150 145 Val Val Ala Gly Glu Asp Arg Ser Lys Leu Ala Asn Met Asn Ala Thr 165 170 175 lle Arg Arg Ile Asp Gln Leu Thr Asn Ile Leu Ala Pro Met Ala Val 180 185 190 Gly Gln Ile Met Thr Phe Gly Ser Pro Val Ile Gly Cys Gly Phe Ile 195 200 205 Ser Gly Trp Asn Leu Val Ser Met Cys Val Glu Tyr Val Leu Leu Trp 210 215 220 Lys Val Tyr Gln Lys Thr Pro Ala Leu Ala Val Lys Ala Gly Leu Lys 225 230 235 240 Glu Glu Glu Thr Glu Leu Lys Gln Leu Asn Leu His Lys Asp Thr Glu 245 250 255 Pro Lys Pro Leu Glu Gly Thr His Leu Met Gly Val Lys Asp Ser Asn 260 265 270 Ile His Glu Leu Glu His Glu Gln Glu Pro Thr Cys Ala Ser Gln Met 275 280 285 Ala Glu Pro Phe Arg Thr Phe Arg Asp Gly Trp Val Ser Tyr Tyr Asn 290 295 300 Gln Pro Val Phe Leu Ala Gly Met Gly Leu Ala Phe Leu Tyr Met Thr 305 310 315 320 Val Leu Gly Phe Asp Cys Ile Thr Thr Gly Tyr Ala Tyr Thr Gln Gly 325 Leu Ser Gly Ser Ile Leu Ser Ile Leu Met Gly Ala Ser Ala Ile Thr 340 345 350 Gly Ile Met Gly Thr Val Ala Phe Thr Trp Leu Arg Arg Lys Cys Gly 365 Leu Val Arg Thr Gly Leu Ile Ser Gly Leu Ala Gln Leu Ser Cys Leu 370 380 Ile Leu Cys Val Ile Ser Val Phe Met Pro Gly Ser Pro Leu Asp Leu 385 390 395 400

Page 6

```
complete seq list.ST25.txt
Ser Val Ser Pro Phe Glu Asp Ile Arg Ser Arg Phe Ile Gln Gly Glu
405 410 415
```

Ser Ile Thr Pro Thr Lys Ile Pro Glu Ile Thr Thr Glu Ile Tyr Met 420 425 430

Ser Asn Gly Ser Asn Ser Ala Asn Ile Val Pro Glu Thr Ser Pro Glu 435 440 445

Ser Val Pro Ile Ile Ser Val Ser Leu Leu Phe Ala Gly Val Ile Ala 450 460

Ala Arg Ile Gly Leu Trp Ser Phe Asp Leu Thr Val Thr Gln Leu Leu 465 470 475 480

Gln Glu Asn Val Ile Glu Ser Glu Arg Gly Ile Ile Asn Gly Val Gln 485 490 495

Asn Ser Met Asn Tyr Leu Leu Asp Leu Leu His Phe Ile Met Val Ile 500 505 510

Leu Ala Pro Asn Pro Glu Ala Phe Gly Leu Leu Val Leu Ile Ser Val 515 520 525

Ser Phe Val Ala Met Gly His Ile Met Tyr Phe Arg Phe Ala Gln Asn 530 535 540

Thr Leu Gly Asn Lys Leu Phe Ala Cys Gly Pro Asp Ala Lys Glu Val 545 550 555 560

Arg Lys Glu Asn Gln Ala Asn Thr Ser Val Val 565

<210> 4 <211> 571

<212> PRT <213> Homo sapiens

<220> <221> MISC_FEATURE <222> (144)..(144)

<223> Xaa = any amino acid except Asp

<400> 4

Met Thr Arg Ala Gly Asp His Asn Arg Gln Arg Gly Cys Cys Gly Ser 10 15

Leu Ala Asp Tyr Leu Thr Ser Ala Lys Phe Leu Leu Tyr Leu Gly His 20 25 30 Page 7

Ser Leu Ser Thr Trp Gly Asp Arg Met Trp His Phe Ala Val Ser Val 35 40 45

Phe Leu Val Glu Leu Tyr Gly Asn Ser Leu Leu Leu Thr Ala Val Tyr 50 55 60

Gly Leu Val Val Ala Gly Ser Val Leu Val Leu Gly Ala Ile Ile Gly 65 70 75 80

Asp Trp Val Asp Lýs Asn Ala Arg Leu Lys Val Ala Gln Thr Ser Leu 85 90 95

val val Gln Asn val Ser val Ile Leu Cys Gly Ile Ile Leu Met Met 100 105 110

Val Phe Leu His Lys His Glu Leu Leu Thr Met Tyr His Gly Trp Val 115 120 125

Leu Thr Ser Cys Tyr Ile Leu Ile Ile Thr Ile Ala Asn Ile Ala Xaa 130 140

Leu Ala Ser Thr Ala Thr Ala Ile Thr Ile Gln Arg Asp Trp Ile Val 145 150 155 160

Val Val Ala Gly Glu Asp Arg Ser Lys Leu Ala Asn Met Asn Ala Thr 165 170 175

Ile Arg Arg Ile Asp Gln Leu Thr Asn Ile Leu Ala Pro Met Ala Val 180 185 190

Gly Gln Ile Met Thr Phe Gly Ser Pro Val Ile Gly Cys Gly Phe Ile 195 200 205

Ser Gly Trp Asn Leu Val Ser Met Cys Val Glu Tyr Val Leu Leu Trp 210 220

Lys Val Tyr Gln Lys Thr Pro Ala Leu Ala Val Lys Ala Gly Leu Lys 225 230 235 240

Glu Glu Glu Thr Glu Leu Lys Gln Leu Asn Leu His Lys Asp Thr Glu 245 250 255

Pro Lys Pro Leu Glu Gly Thr His Leu Met Gly Val Lys Asp Ser Asn 260 265 270

Ile His Glu Leu Glu His Glu Gln Glu Pro Thr Cys Ala Ser Gln Met Page 8

202 775 0146;

275

Ala Glu Pro Phe Arg Thr Phe Arg Asp Gly Trp Val Ser Tyr Tyr Asn 290 295 Gln Pro Val Phe Leu Ala Gly Met Gly Leu Ala Phe Leu Tyr Met Thr 305 310 315val Leu Gly Phe Asp Cys Ile Thr Thr Gly Tyr Ala Tyr Thr Gln Gly 325 330 335 Leu Ser Gly Ser Ile Leu Ser Ile Leu Met Gly Ala Ser Ala Ile Thr 340 345 350 Gly Ile Met Gly Thr Val Ala Phe Thr Trp Leu Arg Arg Lys Cys Gly 365 Leu Val Arg Thr Gly Leu Ile Ser Gly Leu Ala Gln Leu Ser Cys Leu 370 380 Ile Leu Cys Val Ile Ser Val Phe Met Pro Gly Ser Pro Leu Asp Leu 385 400 Ser Val Ser Pro Phe Glu Asp Ile Arg Ser Arg Phe Ile Gln Gly Glu 405 410 415 Ser Ile Thr Pro Thr Lys Ile Pro Glu Ile Thr Thr Glu Ile Tyr Met 420 425 430 Ser Asn Gly Ser Asn Ser Ala Asn Ile Val Pro Glu Thr Ser Pro Glu 435 440 445 Ser Val Pro Ile Ile Ser Val Ser Leu Leu Phe Ala Gly Val Ile Ala 450 450 460 Ala Arg Ile Gly Leu Trp Ser Phe Asp Leu Thr Val Thr Gln Leu Leu 465 470 480 Gln Glu Asn Val Ile Glu Ser Glu Arg Gly Ile Ile Asn Gly Val Gln 485 490 495 Asn Ser Met Asn Tyr Leu Leu Asp Leu Leu His Phe Île Met Val Île 500 505 510 Leu Ala Pro Asn Pro Glu Ala Phe Gly Leu Leu Val Leu Ile Ser Val 515 525

Page 9

```
complete seq list.ST25.txt
Ser Phe Val Ala Met Gly His Ile Met Tyr Phe Arg Phe Ala Gln Asn 530 540
Thr Leu Gly Asn Lys Leu Phe Ala Cys Gly Pro Asp Ala Lys Glu Val
Arg Lys Glu Asn Gln Ala Asn Thr Ser Val Val
<210>
        19
<211>
<212>
        DNA
        Homo sapiens
<213>
<220>
<221>
        exon
        (1)..(19)
<400> 5
                                                                                      19
ccc cga ctc ggt ata aga g
Pro Arg Leu Gly Ile Arg
1 5
<210>
        6
        20
<211>
<212>
        DNA
<213>
        Homo sapiens
<220>
<221>
<222>
        exon
        (1)..(20)
<400> 6
ttc ctc cag aac tcg tgt ag
Phe Leu Gln Asn Ser Cys
1 5
                                                                                      20
<210>
<211>
<212>
        20
        DNA
        Homo sapiens
<220>
<221>
        exon
        (1)..(20)
<400> 7
                                                                                      20
tgg ata agc att ctg ccc tc
Trp Ile Ser Ile Leu Pro
<210>
        8
<211>
        21
<212>
        DNA
```

Page 10

```
complete seq list.ST25.txt
<213> Homo sapiens
<220>
<221> exon
<222> (1)..(21)
<400> 8
taa agc atg tgt act tgg atg
Ser Met Cys Thr Trp Met
                                                                                            21
<210> 9
<211> 19
<212> DNA
<213> Homo sapiens
<220>
<221>
<222>
        exon (1)..(19)
<400> 9
aat gta gcc agg aag tgc c
Asn Val Ala Arg Lys Cys
1 5
                                                                                            19
<210>
<211>
         10
         19
<212> DNA
<213> Homo sapiens
<220>
<221> exon
<222> (1)..(19)
<400> 10
                                                                                             19
aga ggt ggt gcc atc taa g
Arg Gly Gly Ala Ile
1 5
<210>
         11
<211>
<212>
         20
         DNA
<213>
         Homo sapiens
<220>
<221>
        exon
<222> (1)..(20)
<400> 11
                                                                                            20
gga taa gaa cag tct cac tg
Gly Glu Gln Ser His
1 5
<210>
<211>
        12
21
```

Page 11

```
<212> DNA
<213> Homo sapiens
<220>
<221>
<222>
         exon
        (1)..(21)
<400> 12
ttc atc ctt tac cac tac cag
Phe Ile Leu Tyr His Tyr Gln
                                                                                              21
<210> 13
<211> 20
<212> DNA
<213> Homo sapiens
<220>
<221>
        exon
<222> (1)..(20)
<400> 13
tta aac tgc ctt gtt tag tg
Leu Asn Cys Leu Val
                                                                                              20
<210>
         14
<211> 19
<212> DNA
<213> Homo sapiens
<220>
<221>
         exon
<222> (1)..(19)
<400> 14
gcc tca ttt atc acc acc g
Ala Ser Phe Ile Thr Thr
1 5
                                                                                              19
<210>
         15
<211> 20
<212> DNA
<213> Homo sapiens
<220>
<221> exon
<222> (1)..(20)
<400> 15
ttg tgt aaa tgg gca gtc tc
Leu Cys Lys Trp Ala Val
1 5
                                                                                              20
<210> 16
```

Page 12

```
complete seq list.ST25.txt
<211> 20
<212> DNA
<213> Homo sapiens
<220>
<221>
        exon
<222>
        (1)..(20)
<400> 16
cct cgt cta cca aag cga ta
Pro Arg Leu Pro Lys Arg
1 5
                                                                                         20
<210> 17
<211> 20
<212> DNA
<213> Homo sapiens
<220>
<221> exon
<222> (1)..(20)
<400> 17
gct ttt att tct aca tgt cc
Ala Phe Ile Ser Thr Cys
                                                                                         20
<210>
        18
<211>
        20
<212>
        DNA
<213> Homo sapiens
<220>
<221>
        exon
<222> (1)..(20)
<400> 18
                                                                                         20
gct gtg cca atc ctg aga tc
Ala Val Pro Ile Leu Arg
1 5
<210>
        19
        19
<211>
<212> DNA
<213> Homo sapiens
<220>
<221>
        exon
        (1)..(19)
<400> 19
gag cat cag cta taa ctg g
Glu His Gln Leu Leu
1 5
                                                                                         19
```

Page 13

SENT BY: NATH & ASSOCIATES;

```
complete seq list.ST25.txt
         20
21
 <210>
 <211>
 <212>
          DNA
 <213>
          Homo sapiens
 <220>
<221>
         exon
 <222>
         (1)..(21)
 <400> 20
taa tgg att ctc tga acc tac
Trp Ile Leu Thr Tyr
1 5
                                                                                               21
<210>
<211>
        21
21
 <212>
        DNA
 <213>
        Homo sapiens
<220>
<221> exon
<222> (1)..(21)
<400> 21
ttg aaa tgt atg cct gta aac
Leu Lys Cys Met Pro Val Asn
1
                                                                                               21
<210>
         22
<211>
         21
<212>
        DNA
<213> Homo sapiens
<220>
<221>
         exon
<222> (1)..(21)
<400> 22
ttt cca tgc ctc aac ata agg
Phe Pro Cys Leu Asn Ile Arg
1 5
                                                                                               21
<210>
         23
         20
<211>
<212>
         DNA
<213>
         Homo sapiens
<220>
<221>
<222>
         exon
         (1)..(20)
<400> 23
gtt ttt acc aca gct gtg cc
Val Phe Thr Thr Ala Val
1 5
                                                                                              20
```

Page 14

```
24
22
<210>
<211>
<212>
<213>
         DNA
         Homo sapiens
<220>
<221>
<222>
         exon
         (1)..(22)
<400> 24
ata cct taa gat caa tag gat c
Ile Pro Asp Gln Asp
1
<210>
<211>
<212>
         25
15
         DNA
<213>
         Homo sapiens
<220>
<221>
<222>
         N_region
(7)..(9)
<400> 25
tattgcaaat ttggc
<210>
<211>
<212>
         26
15
         DNA
<213>
         Homo sapiens
<220>
<221>
         mutation
<222>
         (7)..(9)
<400> 26
tattgcacat ttggc
```

.

15

22

15